



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF THE FIRST 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN
AND ASSOCIATED REQUESTS FOR RELIEF
FOR
TEXAS UTILITIES ELECTRIC COMPANY
COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

The technical specifications for Comanche Peak Steam Electric Plant, Units 1 and 2 state that the inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Comanche Peak Steam Electric Station, Units 1 and 2 first 10-year inservice inspection (ISI) interval is the 1986 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. TU Electric submitted to the NRC its First 10-Year Interval Inservice Inspection Program Plan, Requests for Relief Nos. B-6 (Rev 1), B-7 (Rev 1), and B-8 for Unit 1 by letter dated July 27, 1995, and Requests for Relief Nos. B-1, B-2, and C-1 for Unit 2 by letter dated March 6, 1995, for Comanche Peak Electric Station, Units 1 and 2.

2.0 EVALUATION AND CONCLUSIONS

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its first 10-year interval inservice inspection program plan, Requests for Relief Nos. B-6 (Rev. 1), B-7 (Rev 1), and B-8 for Unit 1 and Requests for Relief Nos. B-1, B-2, and C-1 for Unit 2 for Comanche Peak Electric Station, Units 1 and 2.

Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the Technical Letter Report attached. The staff has concluded that certain inservice examinations contained in Requests for Relief Nos. B-6 (Rev. 1) and B-8 for Unit 1 and B-1, B-2, and C-1 for Unit 2 cannot be performed to the extent required by Section XI of the ASME Code. In the cases of the above requests for relief, the licensee has demonstrated that specific Section XI requirements are impractical. The licensee's proposed testing will provide reasonable assurance of operational readiness of the subject systems. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for Relief Requests B-6 (Rev. 1) and B-8 for Unit 1, and B-1, B-2, and C-1 for Unit 2. Relief was granted for Relief Request B-7 in a safety evaluation dated February 2, 1995, and the revised information is not significant. Therefore, for Relief Request B-7 (Rev. 1), the original evaluation and conclusion applies, and the relief remains granted pursuant to 10 CFR 50.55a(g)(6)(i).

The relief granted is authorized by law, will not endanger life, property, or the common defense and security and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Attachment: Technical Letter Report

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TECHNICAL LETTER REPORT
FIRST TEN-YEAR INTERVAL INSERVICE INSPECTION
REQUESTS FOR RELIEF
TU ELECTRIC
COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

The licensee, TU Electric, has submitted relief requests for the first 10-year inservice inspection (ISI) intervals at Comanche Peak Steam Electric Station, Units 1 and 2. Requests for Relief B-6 (Rev. 1), B-7 (Rev. 1), and B-8 for Unit 1 were submitted in a letter dated July 27, 1995, and Requests for Relief B-1, B-2, and C-1 for Unit 2 in a letter dated March 6, 1995. The Idaho National Engineering Laboratory (INEL) staff has evaluated the subject relief requests in the following section.

2.0 EVALUATION

The Code of record for the first 10-year ISI intervals at Comanche Peak Steam Electric Station, Units 1 and 2, is the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, 1986 Edition. The information provided by the licensee in support of the relief requests has been evaluated and the bases for disposition are documented below.

A. Requests for Relief B-6 (Rev. 1) for Unit 1 and B-1 for Unit 2, Examination Category B-A, Items B1.40 and B1.21, Reactor Vessel Closure Head-to-Flange and Ring-to-Disc Welds

Code Requirement: Table IWB-2500-1, Examination Category B-A, Item B1.21 requires 100% volumetric examinations of circumferential head welds as defined in Figure IWB-2500-3. Item B1.40 requires 100% surface and volumetric examination of the head-to-flange weld as defined in Figure IWB-2500-5.

ATTACHMENT

Licensee's Code Relief Request: The licensee requested relief from the Code-required 100% volumetric examination of the following welds:

Unit	Description
1	TBX-1-1300-1 and TBX-1-1300-2 Head-to-Flange and Ring-to-Disc welds
2	TCX-1-1300-1 and TCX-1-1300-2 Head-to-Flange and Ring-to-Disc welds

Licensee's Basis for Requesting Relief (as stated):

Unit One [B-6 (Rev. 1)]

"Note - The CPSES ISI Plan requires that 1/3 of each of these welds be examined each inspection period. A relief request revision is processed to document the specific limitations encountered during each examination."

"Interferences from the reactor head flange, shroud and lifting lugs precludes the complete ultrasonic examination of the volume required by Fig.'s IWB-2500-3 and IWB-2500-5 as applicable. Approximately 13% of the examination volume of weld TBX-1-1300-1 and 17% of the examination volume of weld TBX-1-1300-2 did not receive the full code required coverage during the second period examinations.

"Best effort examinations were performed during each period with the following results. Full circumferential scan coverage was obtained for both welds. Axial scan coverage was achieved in one beam path direction with two different beam angles for approximately 99% of the examination volume of TBX-1-1300-1 and for approximately 97% of the examination volume of TBX-1-1300-2.

"There were no recordable indications identified by the best effort volumetric examinations performed or by the required surface examination performed on TBX-1-1300-1."

*The relief request for the examinations performed (1/3 of the length of each weld) during the first period was evaluated in an SER dated November 29, 1994.

Unit Two (B-1)

"Interferences from the reactor head flange, shroud and lifting lugs precludes the complete ultrasonic examination of the volume required by Fig.'s IWB-2500-3 and IWB-2500-5 as applicable. Approximately 15% of the examination volume of weld TCX-1-1300-1 and 17% of the examination volume of weld TCX-1-1300-2 did not receive the full code required coverage.

"Best effort examinations were performed. Full circumferential scan coverage was achieved on one beam path direction with two different beam angles for 99% of the examination volume of TCX-1-1300-1 and for 97% of the examination volume of TCX-1-1300-2.

"There were no recordable indications identified by the best effort volumetric examinations or by the required surface examination performed on TCX-1-1300-1."

Licensee's Proposed Alternative (as stated):

"None"

Evaluation: The licensee provided *Limitation to Examination* sheets that give the layouts and examination coverages of the subject welds; these are summarized below.

<u>Unit</u>	<u>Weld</u>	<u>Volumetric Examination Coverage, %</u>
1	TBX-1-1300-1 Head-to-Flange	87
1	TBX-1-1300-2 Ring-to-Disc	83
2	TCX-1-1300-1 Head-to-Flange	85
2	TCX-1-1300-2 Ring-to-Disc	83

From review of the sketches provided by the licensee, it has been determined that these welds have limitations that prevent 100% ultrasonic examination of the Code-required volume; therefore, the Code requirement is impractical. Design modifications would be required to obtain complete volumetric coverage. Imposition of this requirement would cause a considerable burden on the licensee.

The licensee performed the examinations to the extent practical and proposed no additional examinations. Based on the 83% to 87% volumetric examination coverage and 100% surface examination of the subject welds, it is concluded that significant degradation, if present, would have been detected. As a result, reasonable assurance of operational readiness has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

B. Request for Relief B-7 (Rev. 1) for Unit 1, Examination Category B-B, Item B2.40, Steam Generator Tubesheet-to-Channel Head Welds

Relief was granted for the original version of this relief request in a safety evaluation (SE) dated February 2, 1995. Revision 1 documents the specific limitations encountered during the examination of weld TBX-1-3100-2-1. The referenced SE granted relief for this weld based on the licensee's estimated volumetric examination coverage of 69%. The actual examination resulted in 63% volumetric examination coverage. Since this is not a significant change, the original evaluation and conclusion apply, and it is recommended that relief remain granted pursuant to 10 CFR 50.55a(g)(6)(i) for Revision 1 of this relief request.

C. Request for Relief 1-B-8 for Unit 1, Examination Category B-F, Item B5.70, Dissimilar Metal Nozzle-to-Elbow Weld

Code Requirement: Table IWB-2500-1, Examination Category B-F, Item B5.70, requires 100% volumetric examination, as defined in Figure IWB-2500-8, of dissimilar metal welds.

Licensee's Code Relief Request: The licensee requested relief from the Code-required examination coverage for weld TBX-4200-5.

Licensee's Basis for Requesting Relief (as stated):

"The difficulties associated with ultrasonic examination of spun cast stainless steel material and the specific examination area geometry of this steam generator primary nozzle to elbow weld precludes the complete ultrasonic examination of the volume required by Fig. IWB-2500-8. Approximately 15% of the examination volume did not receive the full code required coverage.

"A best effort examination was performed utilizing a longitudinal wave. Full circumferential scan coverage was obtained in 2 beam path directions for 85% of the examination volume and in one beam path direction for 100% of the examination volume (see pages 2 & 3)*. Other transducers and attempts to use a full V technique proved ineffective on the basic calibration block.

"There were no recordable indications identified by the best effort volumetric examination or by the required surface examination performed."

Licensee's Proposed Alternative (as stated):

"None"

Evaluation: The Code requires 100% volumetric examination of the subject dissimilar metal weld. From review of the supporting information, it has been determined that full examination coverage is impractical due to the scanning surface geometry and centrifugally cast stainless steel. The licensee performed the examinations to the extent practical, obtaining 85% of the required examination coverage. To examine the entire volume of the weld, the components would require modification or replacement with a design conducive to full volumetric examination coverage. Imposition of this requirement would cause a considerable burden on the licensee.

Based on the examination coverage obtained, it is concluded that significant degradation, if present, would have been detected. As a

*Not included with this evaluation.

result, reasonable assurance of operational readiness has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

D. Request for Relief B-2 for Unit 2, Examination Category B-J, Item B9.11, TCX-1-4103-1 Circumferential Piping Weld

Code Requirement: Table IWB-2500-1, Examination Category B-J, Item B9.11, requires 100% volumetric and surface examinations, as defined in Figure IWB-2500-8, of piping welds.

Licensee's Code Relief Request: The licensee requested relief from the Code-required examination coverage for circumferential piping weld TCX-1-4103-1.

Licensee's Basis for Requesting Relief (as stated):

"The specific examination area geometry of this pipe to valve weld precludes the complete ultrasonic examination of the volume require by Figure IWB-2500-8. Approximately 27% of the examination volume did not receive the full code required coverage.

"A best coverage examination was obtained. Axial scan coverage was achieved in one beam path direction with two different beam angles for 100% of the examination volume (see pages 2 & 3)".

"There were no recordable indications identified by the best effort volumetric examination or by the required surface examination performed."

Licensee's Proposed Alternative (as stated):

"None"

Evaluation: The Code requires 100% volumetric and surface examinations of the subject piping weld. From review of the supporting information, it has been determined that the scanning surface geometry (valve on one side) and types of ultrasonic

*Not included with this evaluation.

examination (multiple angle refracted longitudinal waves) prevent full examination coverage. Therefore, the Code requirement is impractical. To ultrasonically examine the entire volume of the weld, modification or replacement of the piping would be required to sufficiently improve the geometry or acoustic properties to allow a complete examination. Imposition of this requirement would cause a considerable burden on the licensee.

Based on the 100% surface and 73% volumetric examination coverages of the piping weld, in combination with examinations performed on similar welds, it is concluded that significant degradation, if present, would have been detected. As a result, reasonable assurance of operational readiness has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

E. Request for Relief C-1 for Unit 2, Examination Category C-A, Item C1.20, Excess Letdown Heat Exchanger Head-to-Flange Weld

Code Requirement: Table IWC-2500-1, Examination Category C-A, Item C1.20, Figure IWC-2500-1, requires 100% volumetric examination of head circumferential welds.

Licensee's Code Relief Request: The licensee requested relief from the Code-required examination coverage for weld TCX-2-1110-1.

Licensee's Basis for Requesting Relief (as stated):

"Interferences from the heat exchanger inlet, outlet and instrumentation nozzles and from the flange taper preclude the complete ultrasonic examination of the volume required by Fig. IWC-2500-1. Approximately 50% of the weld length did not receive the full code required examination (see Pages 2 & 3).

*Not included with this evaluation.

"There were no recordable indications identified by the volumetric examination performed on the accessible portion of the weld length."

Licensee's Proposed Alternative (as stated):

"None"

Evaluation: The Code requires 100% volumetric examination of the subject weld. From review of the supporting information, it has been determined that the scanning surface geometry and obstructions prevent full examination coverage. Therefore, complete Code-required examination of the subject weld is impractical. Examination of the entire volume of the weld would require design modification of the vessel to sufficiently improve the geometry and eliminate obstructions to allow a complete volumetric examination. Imposition of this requirement would cause a considerable burden on the licensee.

Based on the 50% volumetric examination coverage of the subject weld, in combination with examinations performed on similar items, it is concluded that significant degradation, if present, would have been detected. As a result, reasonable assurance of operational readiness has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

3.0 CONCLUSION

The INEL staff has evaluated the relief requests submitted for the first interval for Comanche Peak, Units 1 and 2. Based on these evaluations, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i) for Relief Requests B-6 (Rev. 1) and B-8 for Unit 1 and B-1, B-2, and C-1 for Unit 2. Relief was granted for Relief Request B-7 in an SE dated February 2, 1995. For Relief Request B-7 (Rev. 1), the original evaluation and conclusion should apply, and it is recommended that relief remain granted pursuant to 10 CFR 50.55a(g)(6)(i).